

ROBERT'S AIRCRAFTS SPLIT - 2 *No Holes*

Work Order ID 117706

117706

Page 1

May-01-14 7:29:09 AM

Item ID: D5046-3

Accept

N9000040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Co-Pilot Collective Head

Start Date: 5/01/14

Start Qty: 6.00

6

Cust Item ID:

Required Date: 5/15/14

Req'd Qty: 6.00

6

Customer:

Reference:

Approvals:

Process Plan: MLS

Date: 14-05-01

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D5046

A

100

Cut blanks as per folio

0.00

100

Bandsaw

Memo

0.00

Jeaspa Bandsaw

CUT BLANK AT 5.500"

14/05/06

110

0.00

110

HAAS 1

Memo

0.00

HAAS CNC vertical machine #1

MACHINE AS PER DWG & FOLIO FB296/ D5046-3

FOLIO REV: AA

DWG REV: A

14/05/09

DO NOT BUFF OR POLISH PART

DEBURR

DAS
08
9-89

DQA:

Date: 14/65/16



QA Closed: 14/5/13

Date: 14/5/13

WORK ORDER NON-CONFORMANCE / UPDATE

Work Order update only ☐

Work Order: 117706	DISPOSITION		AGAINST DEPARTMENT/PROCESS			
Part No. D5046-3	Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	
NCR No. 14-3853	Scrap <input checked="" type="checkbox"/>	Machining <input checked="" type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	
	Use-as-is <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	
	Suspected Unapproved <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>		

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector	
Design	14/5/9	110	1	φ0.177 hole is φ0.186 on one side. RC Drill was not Runi temp./chip build up in holder. operator error	DAS 12 9-89 14/5/9	Scrap. n replace B128980 May cause xxx looseness in assembly	DAS 12 9-89 14/5/9	14/05/10	DAS 16 9-89 14/05/09	
Doc/Data						Clean holder + Reset Dede \$ 21.26				D. P. 14/05/09 DAS 08 9-89
Equip/Tooling										
Handling/Pre										
Material										
Operator										
Offset/Setup										
Process										
Supplier										
Training										
Transport										
Unapproved										

FAULT CATEGORY

Landing Gear	General		
<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Folio/Program	<input type="checkbox"/> Outside Dimensions
<input type="checkbox"/> Centre Not Concentric	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Grain	<input type="checkbox"/> Over/Under tolerance
<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damage/Defect	<input type="checkbox"/> Hardware	<input type="checkbox"/> Part Incorrect
<input type="checkbox"/> Crimp/Kink/Ripple/Wave	<input type="checkbox"/> Burrs	<input type="checkbox"/> Inspection Incomplete/Unqualified	<input type="checkbox"/> Part Lost/Missing
<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Part Moved
<input type="checkbox"/> Crushing	<input type="checkbox"/> Countersink	<input type="checkbox"/> Misaligned/off center	<input checked="" type="checkbox"/> Positioned Wrong
<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Mislabeled	<input type="checkbox"/> Power Loss/Surge
<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Drawing	<input type="checkbox"/> Misread	<input type="checkbox"/> Pressure/Forced
<input type="checkbox"/> Marks/Chatter	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Off-set	<input type="checkbox"/> Set-up
<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Calibration	<input type="checkbox"/> Temperature/Cure
<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Fit/Function	<input type="checkbox"/> Out of Sequence	<input type="checkbox"/> Weld
			<input type="checkbox"/> Wrong Stock Pulled
			<input type="checkbox"/> Other

Work Order ID 117706

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117706

Page 2

Item ID: D5046-3

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Co-Pilot Collective Head

Start Date: 5/01/14

Start Qty: 6.00

6

Cust Item ID:

Required Date: 5/15/14

Req'd Qty: 6.00

6

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Run Start

NR1

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC2- Inspect parts off machine FAI/FAIB	0.00							DAS 08 9-89
120									
QC	Memo	0.00							
Quality Control									
130		0.00							
130									
Mill Conv		0.00							
Conventional Milling Machine	Memo	0.00							
	DRILL REMAINING 3 HOLES AS PER DWG.								
	DWG REV: _____								
140		0.00							
140									
QC	QC2- Inspect parts off machine FAI/FAIB	0.00							
Quality Control	Memo	0.00							

N/A → D.A. 14/05/09
This w/o
only

May-01-14 7:29:09 AM

1 17706

Page 3

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Stop *NS2*

Start Date: 5/01/14 **Start Qty:** 6.00 ***6***

Cust Item ID:

Required Date: 5/15/14 **Req'd Qty:** 6.00 ***6***

Customer:

Reference:

Run Start *NR1*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop *NR2*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

[illegible]

ME
14-5-18

Picklist Print

May-01-14 7:29:13 AM

Page 1

Work Order ID: 117706

117706

Parent Item: D5046-3

D5046-3

Parent Item Name: Co-Pilot Collective Head

Start Date: 5/01/14

Required Date: 5/15/14

Start Qty: 6.00

Required Qty: 6.00

Comments: IPP REV. A NEW ISSUE JFS 14/04/15 VERIFIED BY: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6B2.000X05.00 0		Purchased	No			100	f	26.5000	0.459	3			

M6061T6B2 000X05 000

6061T6 Bar 2.00 x 5.000

Location

Loc Qty

Loc Code

MAT

26.5

m128866

2.5

→ m128980

24

15 *OK 14/05/06*

DART AEROSPACE LTD		Work Order:	117706
Description: Co-Pilot Collective Head		Part Number:	D5046-3
Inspection Dwg: D5046 Rev: A		Page 1 of 2	

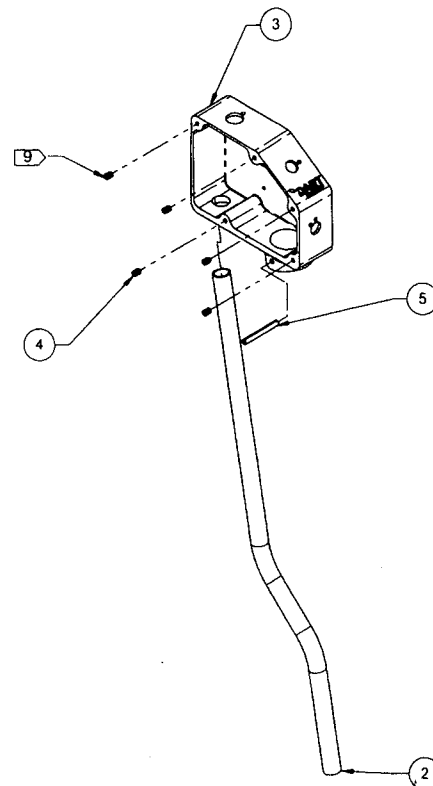
FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.350	+/-0.010	0.349	✓		Vern	6A-01
3.350	+/-0.005	3.350	✓		H+G	31006
R0.26	+/-0.030	R0.250	✓		R-6	ref.
0.300	+/-0.010	0.299	✓		H-6	31006
2.808	+/-0.005	2.808	✓		"	"
1.892	+/-0.005	1.892	✓		"	"
0.10	+/-0.030	0.096	✓		Mic	6A-03
1.214	+/-0.005	1.214	✓		H-6	31006
2.136	+/-0.005	2.136	✓		"	"
0.35	+/-0.030	0.349	✓		Vern	6A-01
Ø0.177	+0.005/-0.001	Ø0.178	✓		"	"
R0.13	+/-0.030	R0.125	✓		R-6	ref.
0.25	+/-0.030	0.247	✓		Mic	6A-03
Ø0.150	+0.005/-0.001	Ø0.152	✓		Vern	6A-01
1.66	+/-0.030	1.659	✓		"	"
2.50	+/-0.030	2.500	✓		"	"
5.30	+/-0.030	5.300	✓		"	"
4.00	+/-0.030	3.996	✓		"	"
R0.30	+/-0.030	R0.300	✓		R-6	ref.
1.782	+/-0.005	1.782	✓		Vern	6A-01
1.518	+/-0.010	1.518	✓		H-6	31006
0.70	+/-0.030	0.699	✓		"	"
1.100	+/-0.010	1.098	✓		Vern	6A-01
10°	+/-0.5°	10°	✓		C-square	"
Ø0.116	+0.004/-0.001	Ø0.117	✓		Vern	6A-01
Ø0.188 x 0.100°	+0.005/-0.001 x +/-0.5°	Ø0.190 x 0.100°	✓		"	"
Ø0.63	+/-0.010	Ø0.627	✓		"	"
0.83	+/-0.030	0.830	✓		"	"
0.60	+/-0.030	0.600	✓		H-6	31006
3.80	+/-0.030	3.800	✓		"	"
Ø1.187	+0.005/-0.000	Ø1.190	✓		Vern	6A-01
0.83	+/-0.030	0.830	✓		"	"
Ø1.660	+/-0.010	Ø1.658	✓		Mic	6A-02
0.830	+/-0.010					
Ø0.460	+0.006/-0.001					
Ø0.136	+0.005/-0.001					
0.375	+/-0.010					

(N/A → For this split w/o only)
"special order"

J.A 14/05/09

ITEM	QTY -043	P/N	DESCRIPTION
1	X	D5046-043	CO-PILOT COLLECTIVE HEAD ASSEMBLY (212)
2	1	D4410-7	CONDUIT
3	1	D5046-3	CO-PILOT COLLECTIVE HEAD
4	5	90296A108	HELI-COIL INSERT (6-32 X 0.276)
5	1	MS171599	PIN



117706 HLT
140501

4.00
REF

RELEASED
2014-04-04

D5046-043 WELDING DETAIL

D5046-043 CO-PILOT COLLECTIVE HEAD ASSEMBLY (212)

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: ANODIZE BLACK PER MIL-A-8625F TYPE I OR IB OR IC OR II OR IIB CLASS 2 AFTER WELDING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1
- 7) WEIGHT: 0.90 lbs
- 8) WELD PER DART QSI 004
- 9) INSTALL AFTER ANODIZING

APPROVED

DESIGN	VS	DART AEROSPACE USA, INC.	
DRAWN	VS	KENT, WA	
CHECKED	DC	DRAWING NO.	REV. A
MFG. APPR.	JFS	D5046	SHEET 2 OF 12
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
DATE	14.01.22	<small>COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.</small>	

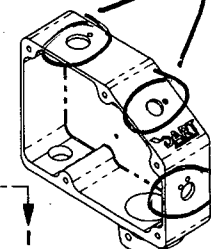
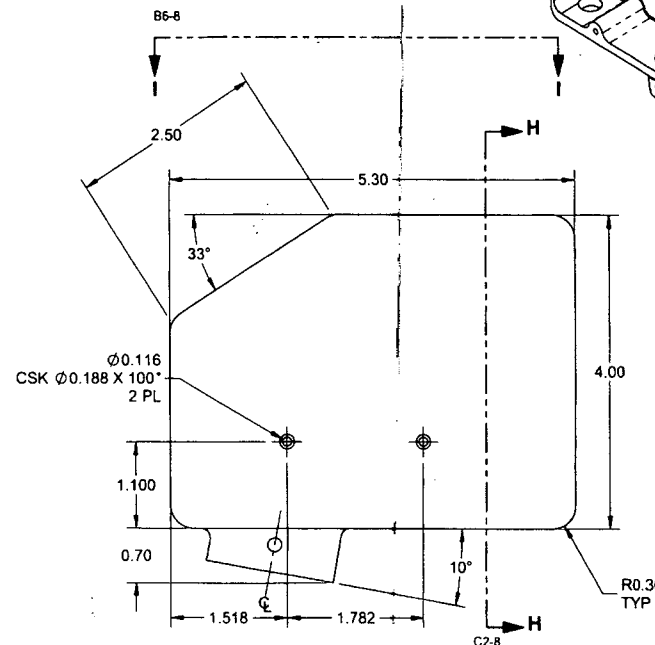
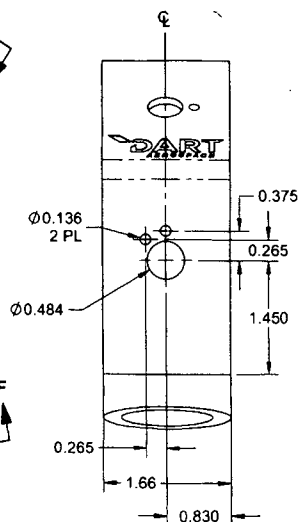
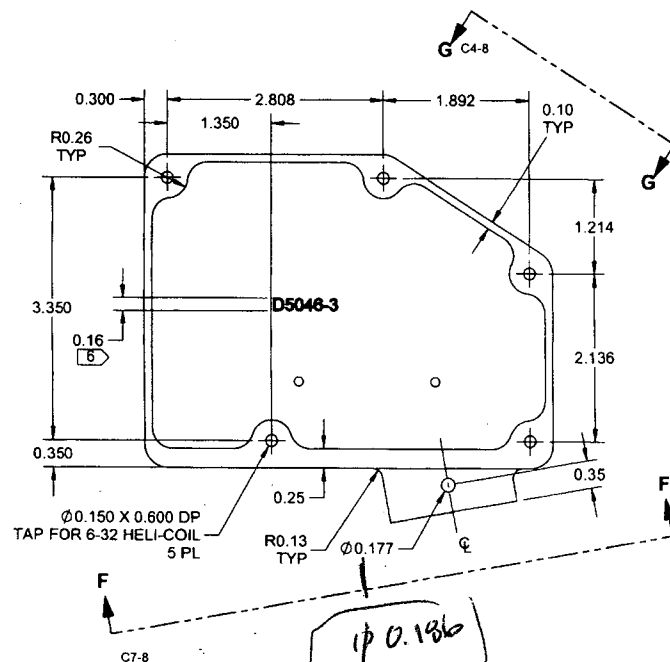
8 7 6 5 4 3 2

D

C

B

A



NO Holes
CUSTOM
ORDER

D5046-3 CO-PILOT COLLECTIVE HEAD (212)

NOTES:

- 1) MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR
QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221
REF DART SPEC M6061T6B
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.3 IN THIS AREA TO MAX DEPTH
OF 0.010 WITH A MIN. TOOL RAD OF R0.010
- 7) WEIGHT: 0.73 lbs

RELEASED
2014-04-04

APPROVED	DESIGN	VS	DART AEROSPACE USA, INC.	
	DRAWN	VS	KENT, WA	
	CHECKED	DC	DRAWING NO.	REV. A
	MFG. APPR.	JFS	D5046	SHEET 7 OF 12
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
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8 7 6 5 4 3 2 1

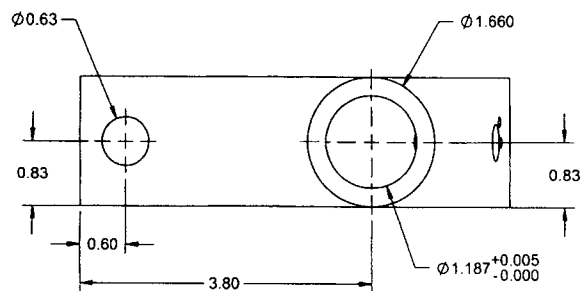
8 7 6 5 4 3 2 1

D

C

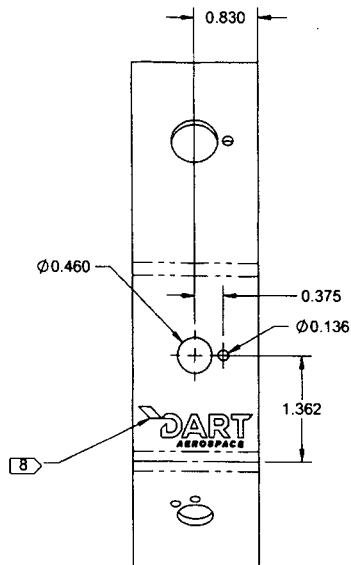
B

A



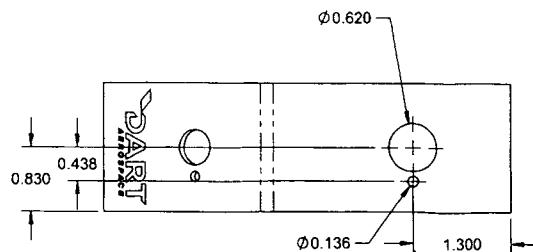
VIEW F-F

B7-7



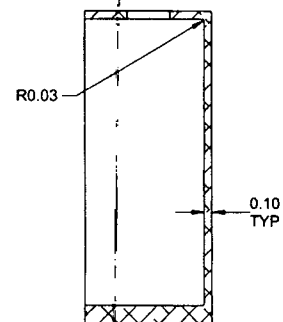
VIEW G-G

D6-7



VIEW I-I

D3-7



SECTION H-H

C2-7

RELEASED
2014-04-04
M

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.73 lbs
- 8) ENGRAVE "DART" LOGO AS SHOWN 0.003-0.005 DP

D5046-3 CO-PILOT COLLECTIVE HEAD (212)
DETAIL VIEWS

APPROVED

DESIGN	VS	DART AEROSPACE USA, INC.	
DRAWN	VS	KENT, WA	
CHECKED	DC	DRAWING NO.	REV. A
MFG. APPR.	JFS	D5046	SHEET 8 OF 12
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
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8 7 6 5 4 3 2 1



Roberts Aircraft

4101 Evans Ave
Cheyenne WY 82001
307-778-5700
tmoore@robertsaircraft.com www.robertsaircraft.com

PURCHASE ORDER

Print Date : Apr-21-2014 1:51 PM

Printed By : 106 Print No. : 3

For : Account No. [DARTHELICAN] DART AEROSPACE LTD. 1270 ABERDEEN ST. HAWKESBURY, ON K6A 1K7 Canada Tel. : 613-632-3336 Fax : 613-632-4443		Our P.O. : 000212 Pg: 1/1	
Remit To : DART AEROSPACE LTD. 1270 ABERDEEN ST. HAWKESBURY, ON K6A 1K7 Canada Tel. : 613-632-3336 Fax : 613-632-4443		Bill To : ROBERTS AIRCRAFT CO. 4101 EVANS AVE. CHEYENNE, WY 82001 Tel. : 307-778-5700	
Ship To : ROBERTS @ LOVELAND 5235 GULFSTREAM CT LOVELAND, CO 80538 United States			
Order Date : Apr-21-2014	Our Ref : 512TA		
Ship Date : See below	F.O.B. : ORIGIN		
Terms : NET 30			
Our Contact : Chris Aguilar			

Line	P/N & Description	Cnd	Qty Order	Ship Date	Unit Price	Amount
1	D212-803-117 COLLECTIVE HEAD 212 LH PIC DUE BY MAY 31ST OR EARLIER IF AVAILABLE	NE	1 EA	Apr-21-2014	\$ 0.0000 EA	

	Sub Total:	\$ 0.00	
	Total:	[USD]	\$ 0.00

Chris Aguilar,

